USER MANUAL

X7822r

ADSL/ADSL2+ 4-port Ethernet Router

VERSION 1.0

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Chapter 1

Getting Started

I. Overview

The ***X7822r/X7822r+*** is a multi-mode ADSL/ADSL2/ADSL2+ router that complies with ANSI T1.413 Issue 2, ITU G.992.1 (X7822r/X7822r+), ITU G.992.2, G.992.3, G.992.4, G.994.5 (X7822r+ only), and ***X7822r+*** supports ADSL2+ as well. The ***X7822r/X7822r+*** provides a 10/100BaseTX Ethernet interface on the DTE side. The broadband line interface supports ADSL Annex A. The X7822***r/X7822r+*** delivers broadband Internet access for enterprises, telecommuters, home, and remote office workers with high-speed data transmission requirements. It supports multiple protocols such as PPP (RFC 2364), IP (RFC 2225/RFC 1577), and RFC 1483 over ATM over ADSL, and PPP (RFC 2516) over Ethernet. X7822***r/X7822r+*** offers convenient configuration and management locally by telnet, SNMP, and a Web-browser through the Ethernet interface, and remotely through the ADSL interface.

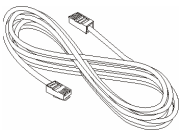
II. Features

- ✓ High Speed Asymmetrical Data Transmission on Twisted Copper Pair Wire
- ✓ Service providers can deploy ADSL rapidly over existing wire infrastructure (POTS or ISDN line)
- ✓ Interchangeable between Bridge and Router mode
- ✓ RFC 1483 Bridge and Routing over ATM over ADSL
- ✓ PPPoE, and IPoA, and PPPoA Routing over ADSL
- ✓ 10/100BaseT Ethernet Port for PC/LAN connection
- ✓ High quality, simple operation, and low power consumption
- ✓ Compatible and interoperable with most central office side ADSL DSLAM or Multi-service Access Systems
- ✓ Configuration and management with Telnet through the Ethernet interface, and remote Telnet through ADSL interface
- ✓ Firmware upgradeable through TFTP, HTTP
- ✓ Interoperability complies with TR-48

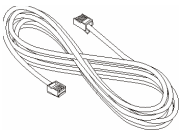
III. Packaging

This package consists of the following items:

X7822r/X7822r+ ADSL device unit



RJ-45 Cable



RJ-11 Cable

AC Adapter

User's Manual CD

IV. Safety Guidelines

In order to reduce the risk of fire, electric shock and injury, please adhere to the following safety guidelines.

- ✓ Carefully follow the instructions in this manual; also follow all instruction labels on this device.
- ✓ Except for the power adapter supplied, this device should not be connected to any other adapters.
- ✓ Do not spill liquid of any kind on this device.
- ✓ Do not place the unit on an unstable stand or table. This unit may drop and become damaged.
- ✓ Do not expose this unit to direct sunlight.
- ✓ Do not place any hot devices close to this unit, as they may degrade or cause damage to the unit.
- ✓ Do not place any heavy objects on top of this unit.
- ✓ Do not use liquid cleaners or aerosol cleaners. Use a soft dry cloth for cleaning.

V. Appearance

Front Panel

	Label	LED Status	Color	Description
①	LAN	ON	Green	Ethernet transmitting
②	ACT	ON	Green	Data transmitting/receiving
③	PWR	ON	Green	Power supply is connected
④	WAN	Blinking	Green	Training with DSLAM
		ON	Green	ADSL link is ready
⑤	ALM	Blinking	RED	Booting up
		ON	RED	Error

Rear Panel

① ② ③ ④

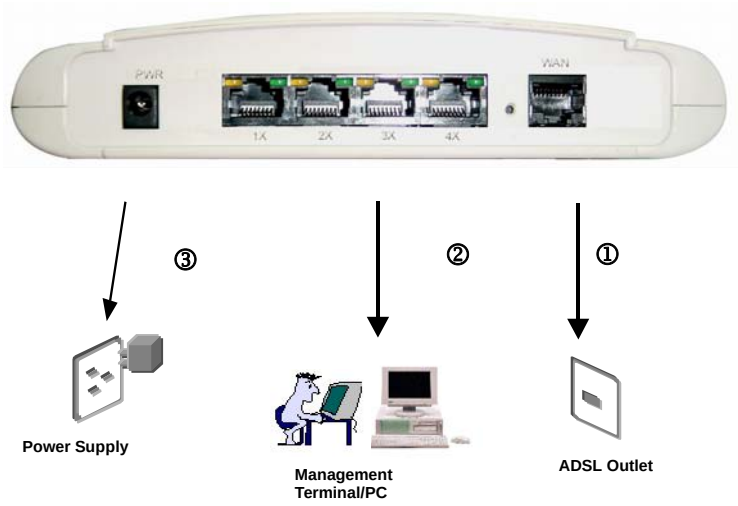
	Label	Description
①	PWR	Power jack; connect to a power adapter.
②	ETHERNET	RJ-45 ports; connect to a PC or LAN.
③	RESET	Reset the modem back to factory settings by holding down on this button.
④	WAN	RJ-11 port; connect to the ADSL outlet.

VI. Hardware Installation

1. Connect one end of the ADSL cable to the WAN port of *X7822r/X7822r+* and the other end to the ADSL wall outlet.

2. Using an RJ-45 cable, connect one end to the Ethernet port of *X7822r/X7822r+* and the other end to the LAN or a PC with an Ethernet adapter installed.

3. Plug the AC adapter into the AC power socket, and then connect the DC jack to the PWR inlet of *X7822r/X7822r+*.



Note: Be sure to use a RJ-45 crossover cable while connecting to a hub.

VII. Management

- ✓ **Local Ethernet Port (telnet)** – connect the Ethernet port to your local area network or directly to a PC, "Telnet" ***X7822r/X7822r+*** from any workstation in the LAN. The default local Ethernet IP address is "192.168.1.1". See Chapter 2, Command Line Interface, for more details.
- ✓ **Local Ethernet Port (web-browser)** – connect the Ethernet port to your local area network or directly to a PC. Launch your web browser and enter default local Ethernet IP address "192.168.1.1" into the address bar.
- ✓ **ADSL Port from Remote Site** – while the ADSL connection is in service, you may remotely "Telnet" ***X7822r/X7822r+*** from a workstation connected to the CO equipment.

Note: As operating an ADSL device requires technical know-how and experience, it is recommended that only qualified technical staff manage ***X7822r/X7822r+***. Therefore, a password authentication is required when you enter the command line and Web interface. See the *Default Values* section to obtain the password.

VIII. Default Values

X7822r/X7822r+ is pre-configured with the following parameters; you may also re-load the default parameters by pressing the reset button of the modem for about 10 seconds or by using the **System Commands** link in the Web interface.

Username/Password: admin

Default IP Address

Ethernet (local) IP: 192.168.1.1

Subnet mask: 255.255.255.0

Protocol

RFC1483 Bridge: VPI/VCI: 8/35

Class (QoS): UBR

WAN and ADSL

Local Line Code: Multi Mode

DHCP Server: Disable

DNS Relay: Disable

Note: The Username and Password are case-sensitive.

IX. Software Upgrade

You may easily upgrade ***X7822r/X7822r+*** embedded software by obtaining the compressed upgrade kit from the service provider and then following the steps for upgrading through either a DOS prompt or a Web-browser:

Software upgrade through a DOS prompt

Step 1. Extract the ZIP file for updated firmware.

Step 2. Connect ***X7822r/X7822r+*** via the local Ethernet port or remote ADSL link, making sure that the ***X7822r/X7822r+*** Ethernet IP address and your terminal are properly configured so that you can successfully "*ping*" ***X7822r/X7822r+***. The default local IP address is "192.168.1.1".

Step 3. Under the DOS prompt, execute the command "xupgrade <*IP address of* ***X7822r/X7822r+*** >", for instance, "xupgrade 192.168.1.1".

Step 4. This upgrading process may last as long as 60 seconds.

Step 5. Reboot ***X7822r/X7822r+*** with new software.

Note: Strictly maintain stable power to ***X7822r/X7822r+*** while upgrading its software. If the power fails during the upgrading process, contents in the memory could be destroyed, and the system may hang. In such a case, you must call the dealer or system integrator for repairs.

Software upgrade through a Web-browser

Step 1. Extract the ZIP file for updated firmware.

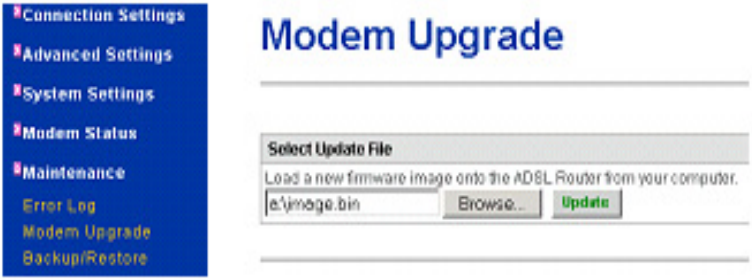
Step 2. Connect ***X7822r/X7822r+*** via the local Ethernet port or remote ADSL link, making sure that the ***X7822r/X7822r+*** Ethernet IP address and your terminal are properly configured so that you can successfully "*ping*" ***X7822r/X7822r+***. The default local IP address is "192.168.1.1".

Step 3. Launch the Web browser (IE or Netscape), and enter the default IP address 192.168.1.1 into the address bar to access the Web management page.

Step 4. Click on the **Maintenance** link in the navigation bar and then on the **Modem Upgrade** link below it.

Step 5. Click on the **Browse** button to select the upgrade file.

Step 6. Click on the **Update** button when completed.



Note: Strictly maintain stable power to ***X7822r/X7822r+*** while upgrading its software. If the power fails during the upgrading process, contents in the memory could be destroyed, and the system may hang. In such a case, you must call the dealer or system integrator for repairs.

Chapter 2

Command Line Interface

I. Setup

1. Start "Hyper-terminal" program

On Windows 98 or Windows NT:

Click on the **Start** button → **Programs** → **Accessories** → **Hyper Terminal Group** → Double Click **"Hypertrm.exe"** → Enter a Connection Name → Select Icon → Click **OK**

2. Select a port to communicate with *X7822r/X7822r+*

Choose **TCP/IP** and click **OK**

3. Set Connection Properties

Connect To:
Host address: 192.168.1.1
Port number: (Choose the port corresponding to the hardware connection)
Connect using: TCP/IP (Winsock)

Settings:
Function, arrow, and ctrl keys act as: Windows keys
Backspace key sends: Delete
Emulation: Auto-detect
Telnet terminal: ANSI
Back-scroll buffer lines: 500

ASCII Setup:
Echo typed characters locally: enable
Line delay: 0 milliseconds
Append line feeds incoming line ends: enable
Wrap lines that exceed terminal width: enable

II. CLI Commands

1. Main Menu Commands

Type "?" following the "→" to retrieve a list of commands under the main menu to begin the configuration.

Command	Syntax	Description / Parameters
▸ Display	→ display	Displays the configuration of IP
▸ Lan	→ lan	Enters the LAN menu *(See LAN Menu commands for more details)*
▸ Restart	→ restart	Reboots the modem
▸ Restore	→ restore	Sets all configurations to default
▸ Ping	→ ping <ipAddress> [<subnetMask>]	Pings the specified IP address for testing purposes
▸ Save	→ save	Saves the current configuration

DISPLAY

- Displays the IP address, subnet mask and software version.
- *Syntax*: display

```
→ display
Version : 1.00XAT0.7722A (1.00XAT0.7722A 12/Jan/2004 14:30)
IP Interface: iplan
                                    Ipaddr : 192.168.1.1
                                        Mask : 255.255.255.0

→
```

LAN

- Enters the lan menu
- *Syntax*: lan

```
→ lan

lan>
```

PING

- Pings a specified IP address.
- *Syntax*: ping <ipAddress>
- *Example*: ping 192.168.0.81

```
→ ping 192.168.1.1
ping: PING 192.168.1.1: 32 data bytes
ping: 40 bytes from 192.168.1.1: seq=0, ttl=128, rtt<10ms192.168.0.81

→
```

RESTART

- Restarts the modem.
- *Syntax*: restart

```
→ restart

Login:
```

RESTORE

- Sets all configurations to factory default settings.
- *Syntax*: restore

```
→ restore
Restoring factory defaults...

→
```

SAVE

- Saves the current configuration.
- *Syntax*: save

```
→ save

Saving configuration...
Configuration saved.
→
```

2. LAN Menu Commands

Type "lan" following the "→" to enter the LAN menu.

Command	Syntax	Description / Parameters
▸ Setip	lan→ setip <ipAddresss> [<subnet mask>]	Configures IP settings
▸ Home	lan→ home	Returns to the main menu

SETIP

- Configures the IP address and subnet mask of ***X7822r/X7822r+***.
- *Syntax*: setip <ipaddress>[<subnet mask>]
- *Example*: setip 192.168.1.10 255.255.255.0

```
lan> setip 192.168.1.10 255.255.255.0

lan>
```

HOME

- Returns to the main menu
- *Syntax*: home

```
lan> home

→
```

Chapter 3

Web Management Interface

I. Overview

The Web Management Interface is provided in order to configure ***X7822r/X7822r+*** as easily as possible. It provides a user-friendly graphical interface through a Web platform. You may configure bridge or router functions to accommodate your needs. In the section below, each configuration item is described in detail.

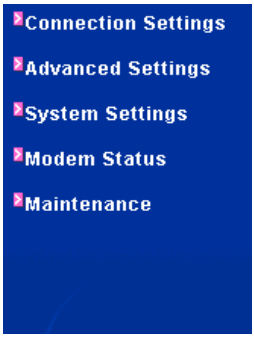
II. Preparation

1. Please refer to the hardware installation procedure in Chapter 1 to install ***X7822r/X7822r+***.
2. You should configure your PC to the same IP subnet as the ***X7822r/X7822r+***.
   Example: ***X7822r/X7822r+***: 192.168.**1.1**
   Your PC: 192.168.**1.x**
3. Connect your PC to ***X7822r/X7822r+*** and make sure that the PING function is working properly. The default IP address of this device is 192.168.1.1
4. Launch the Web browser (IE or Netscape), and enter the default IP address 192.168.1.1 into the address bar to access the Web management page.
5. The **Login** dialog box will appear first.

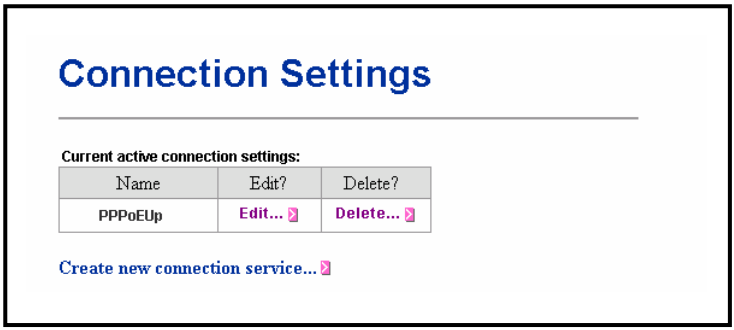
1. Login

- The **Enter Network password** window will pop up when starting the configuration. With the window active, type **admin** for both **User name** and **Password**, and then click on the **OK** button. You can also edit the username and password or add a new profile *(see section 4.3 Management for further details).*

2. Connection Settings



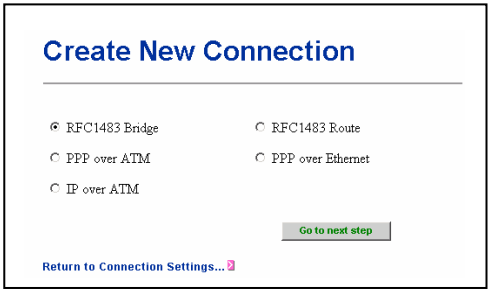
- Click on the **Connection Settings** link on the navigation bar.
- This page lists the WAN connection protocols that are available on this device. Please read the following instructions for creating each type of WAN connection.



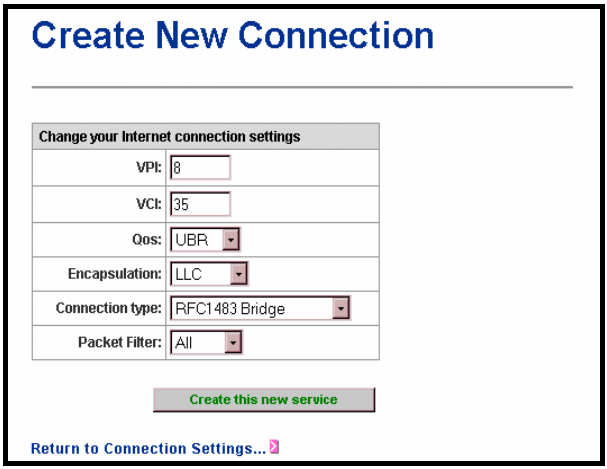
- You can create multiple WAN connections for each of following protocols:
  - 2.1 RFC 1483 Bridge
  - 2.2 RFC 1483 Route
  - 2.3 PPP over ATM (PPPoA)
  - 2.4 PPP over Ethernet (PPPoE)
  - 2.5 IP over ATM (IPoA)

2.1 RFC 1483 Bridge

- Click on the **Create new connection service** link to display the types of service available.



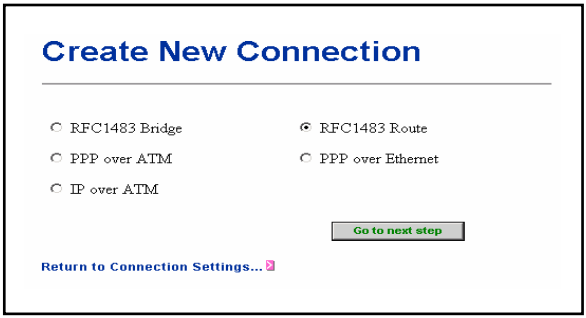
- Select **RFC1483 Bridge** and then click on the **Go to next step** button.
- You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu
- **Encapsulation:** Select LLC or VC-Mux from the menu.
- **Connection type:** Select RFC1483 Bridge.
- **Packet Filter:** Select the packet filter type from the menu.
- Click on the **Create this new service** button to complete the configuration. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

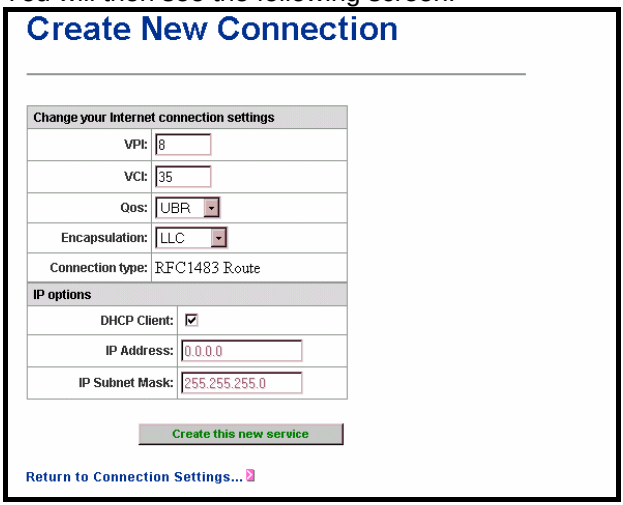
2.2 RFC 1483 Route

- Click on the **Create new connection service** link to display the types of service available.



- Select **RFC 1483 Route** and then click on the **Go to next step** button.

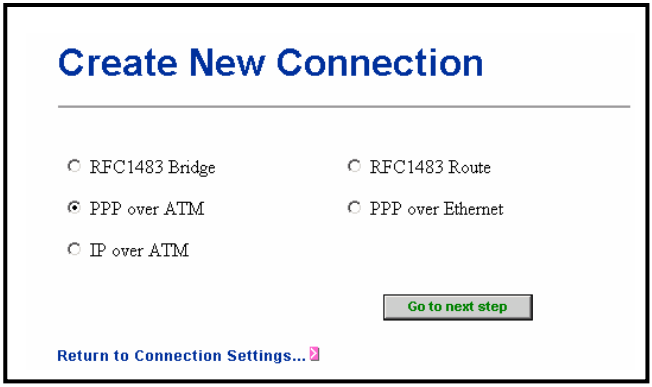
You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu.
- **Encapsulation:** Select LLC or VC-Mux from the menu.
- **DHCP Client:** Check this box if you would like the IP address for this connection to be determined by a DHCP server (if you select this option, you do not need to enter an IP address or subnet mask).
- **IP Address:** Enter the IP address of the connection (if the new connection is not a DHCP client).
- **IP Subnet Mask:** Enter the subnet mask for the IP address above (if not a DHCP client).
- Click on the **Create this new service** button to complete the configuration. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

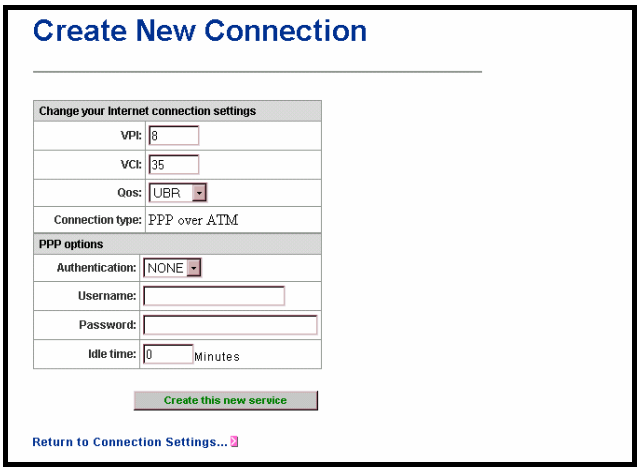
2.3 PPP over ATM (PPPoA)

- Click on the **Create new connection service** link to display the types of service available.



Select **PPP over ATM** and then click on the **Go to next step** button.

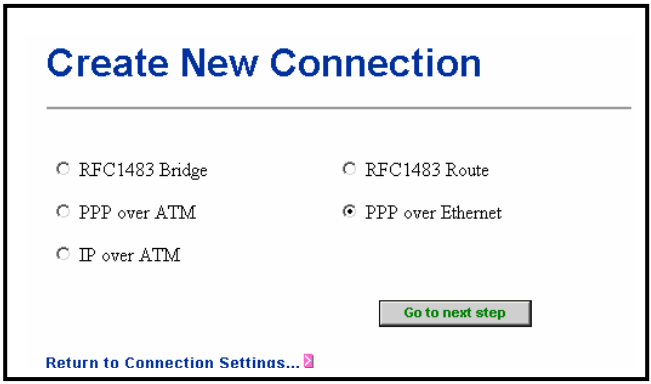
You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu.
- **Authentication:** Select PAP or CHAP.
- **Username:** Enter the user name for this connection (from ISP).
- **Password:** Enter the password for this connection (from ISP).
- **Idle time:** Enter a number for the idle time in seconds. This will end the call if the connection is idle for the specified time (0 indicates that the call will not be ended).
- Click on the **Create this new service** button to complete the configuration. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

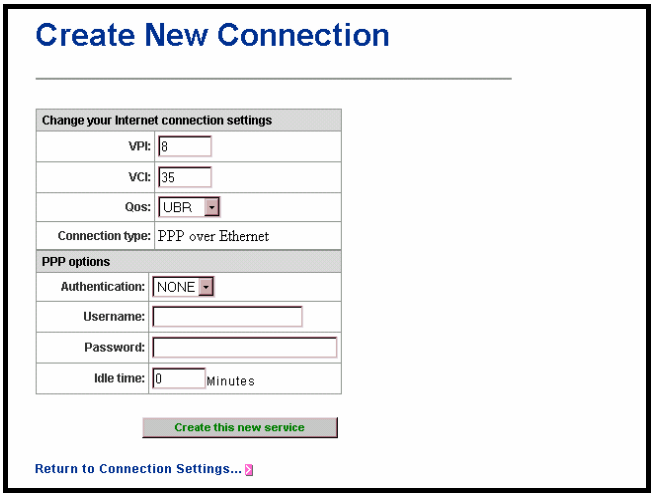
2.4 PPP over Ethernet (PPPoE)

- Click on the **Create new connection service** link to display the types of service available.



- Select **PPP over Ethernet** and then click on the **Go to next step** button.

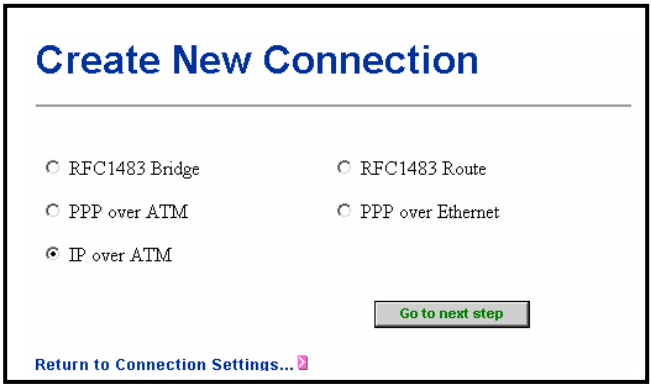
You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu.
- **Authentication:** Select PAP or CHAP.
- **Username:** Enter the user name for this connection (from ISP).
- **Password:** Enter the password for this connection (from ISP).
- **Idle time:** Enter a number for the idle time in seconds. This will end the call if the connection is idle for the specified time (0 indicates that the call will not be ended).
- Click on the **Create this new service** button to complete the configuration. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

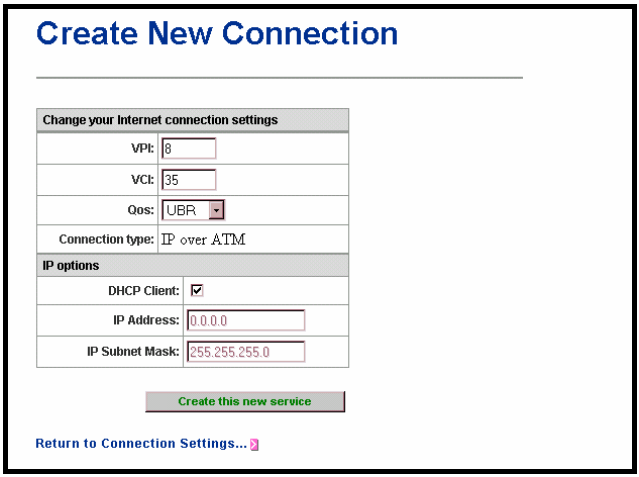
2.5 IP over ATM (IPoA)

- Click on the **Create new connection service** link to display the types of service available.



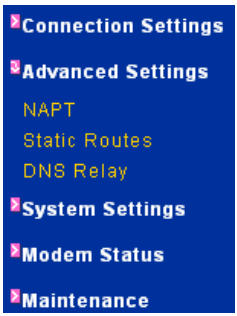
- Select **IP over ATM** and then click on the **Go to next step** button.

You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu.
- **DHCP Client:** Check this box if you would like the IP address for this connection to be determined by a DHCP server (if you select this option, you do not need to enter an IP address or subnet mask).
- **IP Address:** Enter the IP address of the connection (if the new connection is not a DHCP client).
- **IP Subnet Mask:** Enter the subnet mask for the IP address above (if not a DHCP client).
- Click on the **Create this new service** button to complete the configuration. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

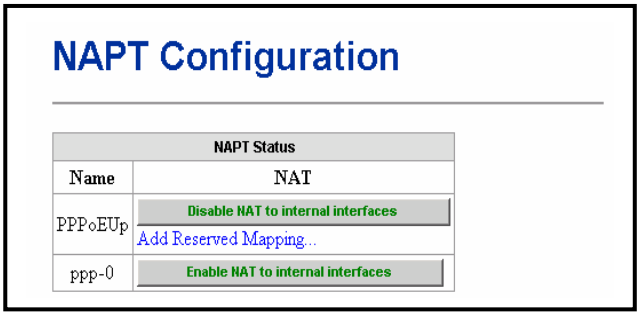
3. Advanced Settings



- Click on the **Advanced Settings** link on the navigation bar.
- This section includes **NAPT (Network Address Port Translation)**, **Static Routes**, and **DNS Relay**. Each section is described in detail below.

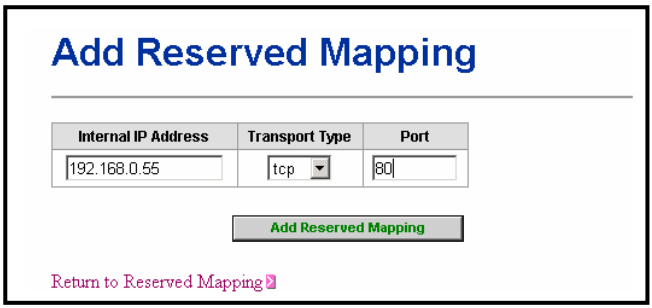
3.1 NAPT (Network Address Port Translation)

- Click on the **NAPT** link in the navigation bar to view the NAPT configuration page. This page displays the NAT status of the available connections.



- To enable NAT on an interface, click on the **Enable NAT to internal interfaces** button.
- To disable NAT on an interface, click on the **Disable NAT to internal interfaces** button.

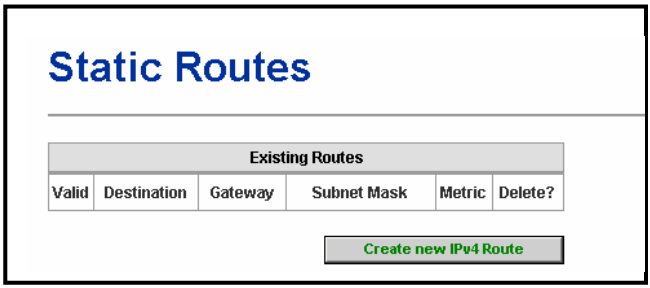
- You may map a port to an interface by clicking on the **Add Reserved Mapping** link under the **Disable NAT to internal interfaces** button. You will then see the following screen:



- **Internal IP Address:** Enter the IP address to which you would like to map a protocol and port.
- **Transport Type:** select a protocol from the drop-down list.
- **Port:** Enter the port number of that protocol.
- Click on the **Add Reserved Mapping** button when completed. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

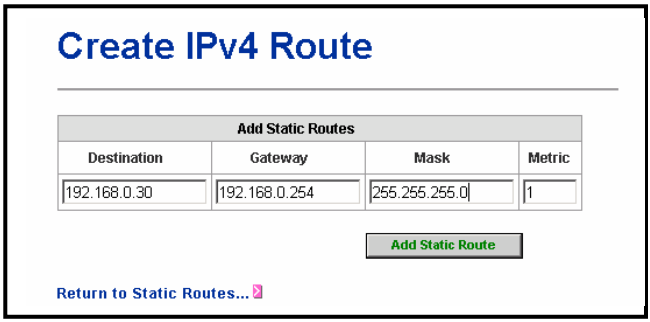
3.2 Static Routes

- Click on the **Static Routes** link in the navigation bar to view the IP Routing table.



- Click on the **Create new IP4 Route** button to add a new route.

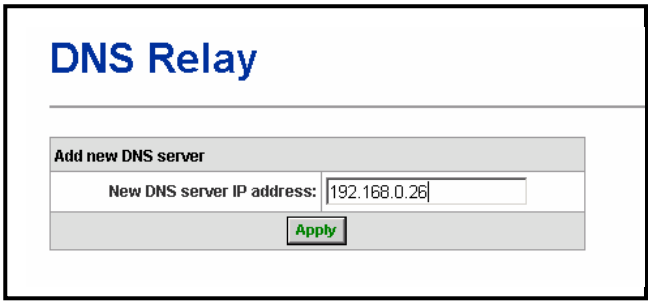
You will then see the following screen:



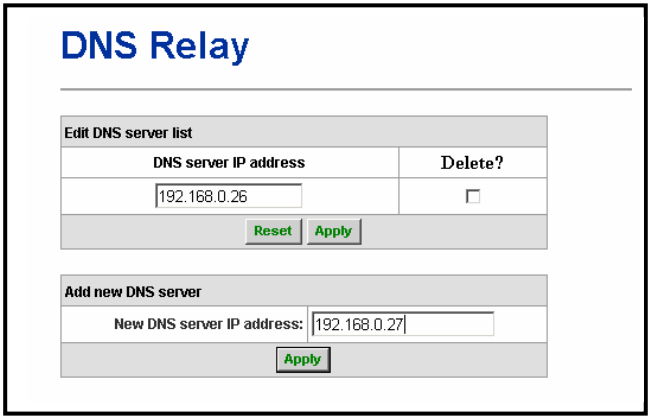
- **Destination:** Enter the IP Address of the destination router.
- **Gateway:** Enter the IP Address of the gateway.
- **Mask:** Enter the subnet mask of the gateway IP address.
- **Metric:** Enter the number of hops required to reach the destination.
- Click on the **Add Static Route** button when completed. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

3.3 DNS Relay

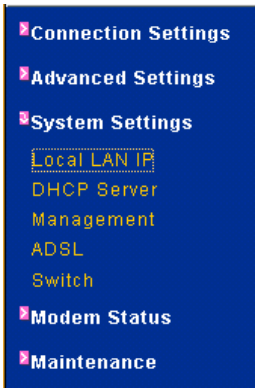
- Click on the **DNS Relay** link in the navigation bar to view the DNS Relay table.
- Enter the Primary DNS address into the text box and then click on the **Apply** button.



- On the next screen, you may add a Secondary DNS address into the text box. Click on the **Apply** button to continue.
- To delete a DNS address, check the **Delete?** box, and click on the **Apply** button. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.



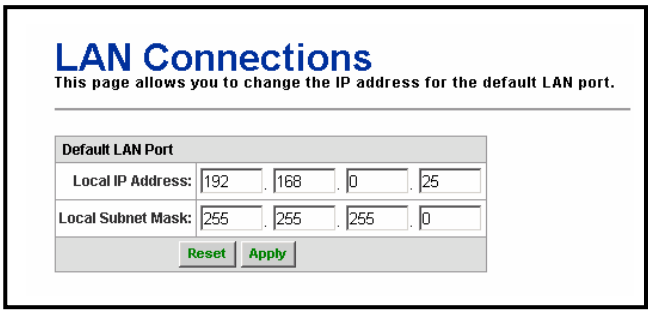
4. System Settings



- Click on the **System Settings** link on the navigation bar.
- This section includes **Local LAN IP**, **DHCP Server**, **Management**, **ADSL** and **Switch**. Each section is described in detail below.

4.1 Local LAN IP

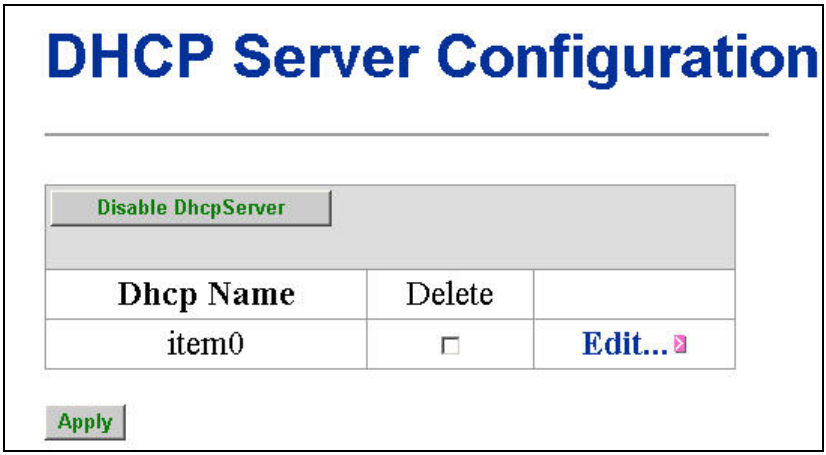
- Click on the **Local LAN IP** link in the navigation bar to view the LAN IP table.


LAN Connections
This page allows you to change the IP address for the default LAN port.
Default LAN Port
Local IP Address: 192 . 168 . 0 . 25
Local Subnet Mask: 255 . 255 . 255 . 0
Reset
Apply

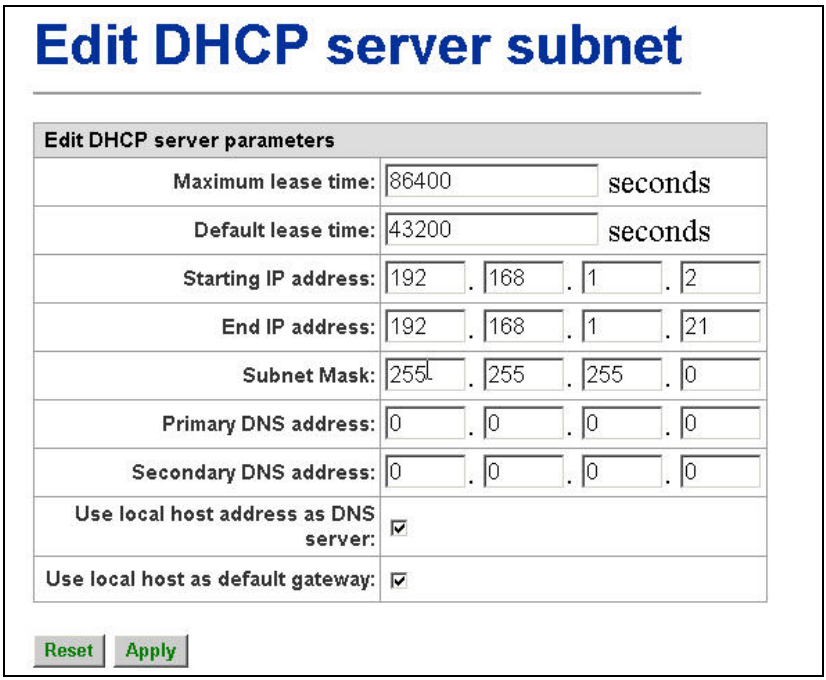
- Define the primary IP address and subnet mask of your device here, and make changes by editing the IP address in the text box.
- Click on the **Apply** button to save the configurations. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

4.2 DHCP Server

- This device can be set up to function as a DHCP Server and to enable data connection between multiple PCs through the configuration of IP address ranges and lease times.
- Click on the **DHCP Server** link in the navigation bar to view the DHCP Server settings. The screen will display as below:



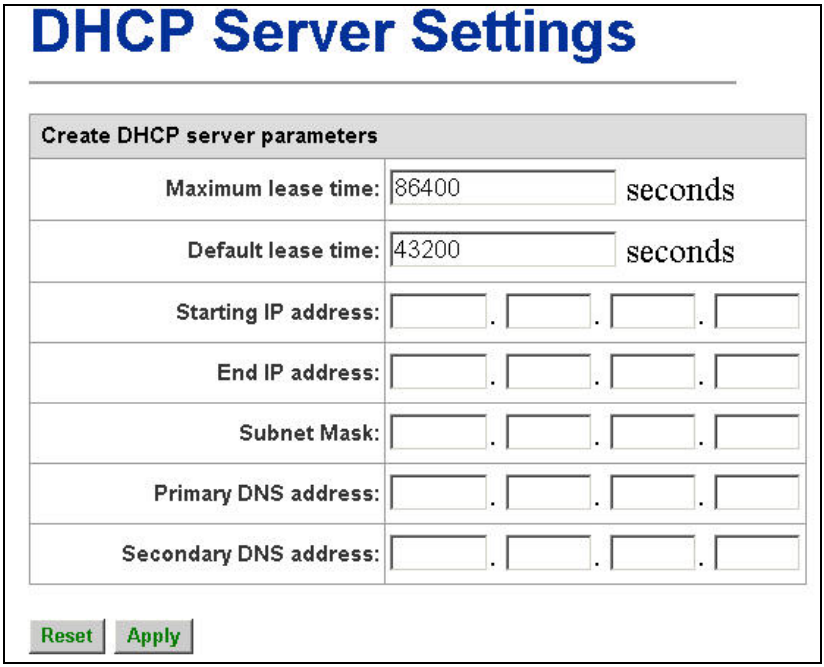
- To **disable** the DHCP server click on the **disable** button
- To **delete** a DHCP configuration check it and click **Apply**
- To create a **new DHCP configuration** see **Section 4.2.1**
- To **edit** the DHCP configuration click **Edit**, the screen will display as below:



- **Maximum Lease Time:** The maximum time, in seconds that a DHCP lease should be provided to a host.
- **Default Lease Time:** The default time, in seconds that a DHCP lease should be provided to a host.
- **Starting IP address**: Enter the IP address that you would like the DHCP server to start assigning addresses from.
- **Ending IP address**: Enter the last IP address that you would like the DHCP server to assign.
- **Subnet Mask**: Enter the subnet mask for the server to assign.
- **Primary DNS address**: Enter the Primary DNS IP address.
- **Secondary DNS address**: Enter the Secondary DNS IP address.
- **Use local host address as DNS server**: Check this to use the local host as the DNS server
- **Use Local host as default gateway**: Check this to use the local host as the default gateway.
- Click on the **Apply** button when complete.

4.2.1 Create New IP Range

- Click on the **DHCP Server** link in the navigation bar to view the DHCP Server settings, and then click on **Create new IP range** at the bottom of the screen. The screen will display as below:



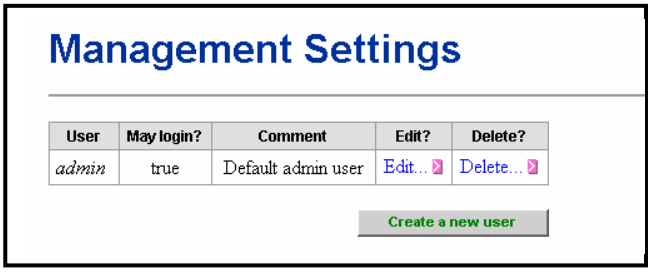
- **Maximum Lease Time:** The maximum time, in seconds that a DHCP lease should be provided to a host.
- **Default Lease Time:** The default time, in seconds that a DHCP lease should be provided to a host.
- **Starting IP address**: Enter the IP address that you would like the DHCP server to start assigning addresses from.
- **Ending IP address**: Enter the last IP address that you would like the DHCP server to assign.
- **Subnet Mask**: Enter the subnet mask for the server to assign.
- **Primary DNS address**: Enter the Primary DNS IP address.
- **Secondary DNS address**: Enter the Secondary DNS IP address.
- Click on the **Apply** button when complete.

4.3 Management

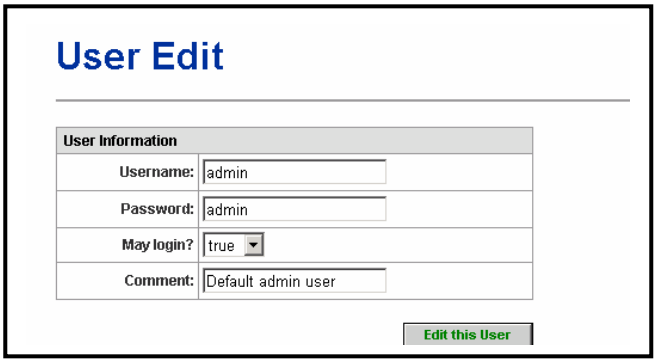
Click on the **Management** link in the navigation bar to view the user login details. Here you may edit user login details or add/delete users. Each item is described below.

4.3.1 Edit User

- Click on the **Edit** link to change the settings of the **admin** user.



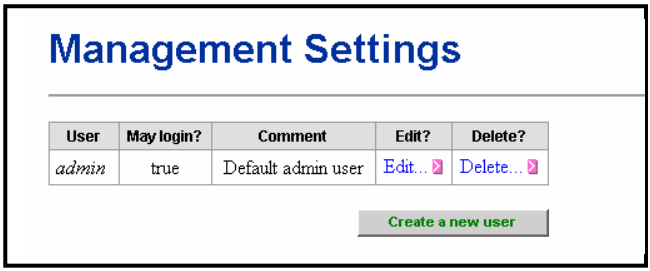
- On this page you may change the settings of the **admin** user.



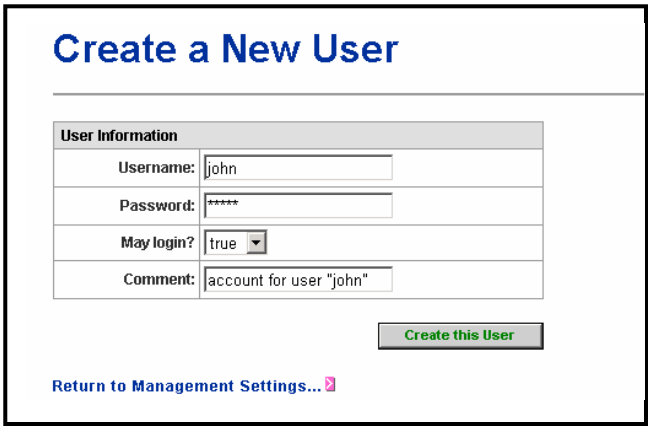
- **Username:** Enter a new username.
- **Password:** Enter a new password if you would like to change the current password *(highly recommended for security purposes).*
- **May Login?:** Do not change this setting to *false* for every user, otherwise you will not be able to log into the device.
- **Comment:** You may add a comment/description here.
- Click on the **Edit this User** button to complete this configuration. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

4.3.2 Add User

- Click on the **Create new user** link to add a user.



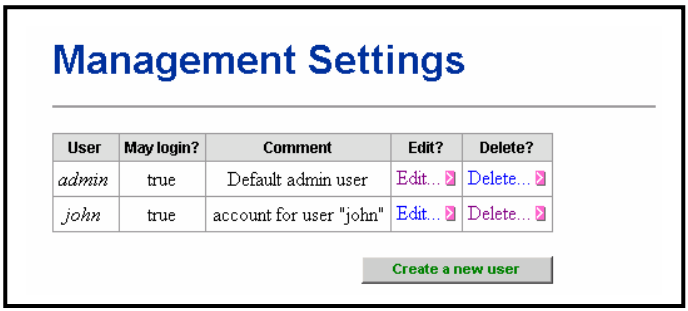
- On this page you may fill in the details for the new user.



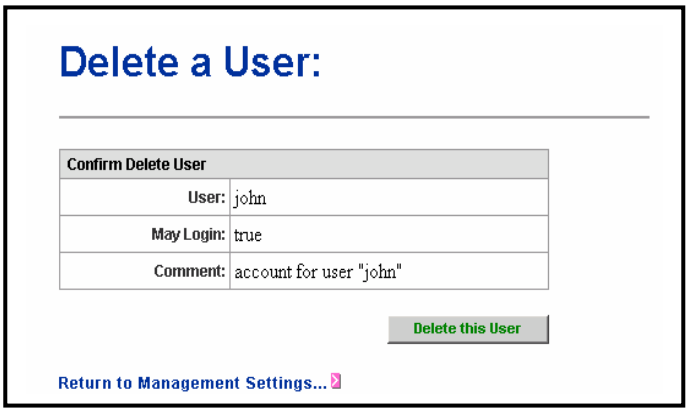
- **Username:** Enter a new username for the new user.
- **Password:** Enter a password for the new user.
- **May Login?:** Do not change this setting to *false* for every user, otherwise you will not be able to log into the device.
- **Comment:** You may add a comment/description here.
- Click on the **Create this User** button to complete this configuration. You will then see the new user added to the table. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

4.3.3 Delete User

- In order to delete an existing user, click on the **Delete** link next to the user's name.

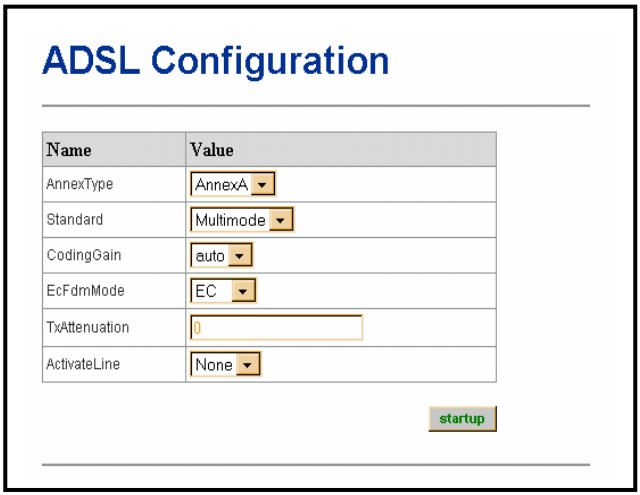


- You will then be asked to confirm if you would like to delete this user. Click on the **Delete this User** button. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.



4.4 ADSL

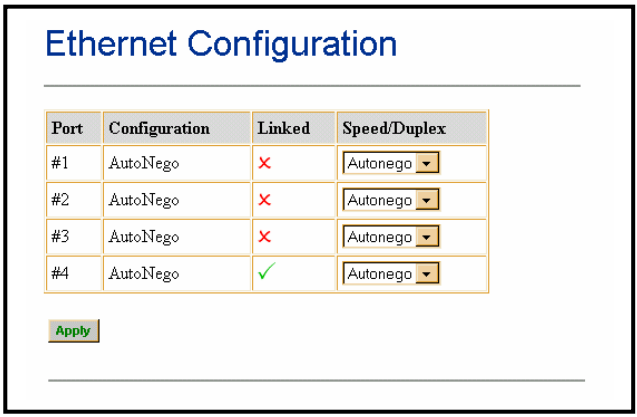
- Click on the **ADSL** link on the navigation bar to view the ADSL Configuration table. This table shows the current ADSL settings, including annex type, line standard, coding gain, EC/FDM mode, line attenuation, and line activation.



- **AnnexType:** Choose an annex type from the drop-down menu. The default for the device is Annex A.
- **Standard:** Choose a standard for signal coding for the ADSL line from the drop-down menu.
- **CodingGain:** Choose a coding gain value from the drop-down menu.
- **Ec/FdmMode:** Choose either EC or FDM mode from the drop-down menu.
- **TxAttenuation:** Choose a value for line attenuation from the drop-down menu.
- **ActivateLine:** Choose a value for activation of the ADSL line settings. You may choose **Abort** to suspend activation of the new ADSL settings until the next cold boot of the modem. If you choose **Start,** you must also permanently save the settings in order to reactivate the line. After the line has been reactivated, the value in the ActivateLine box will be set to **None**.
- Click on the **Startup** button to temporarily save the changes. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

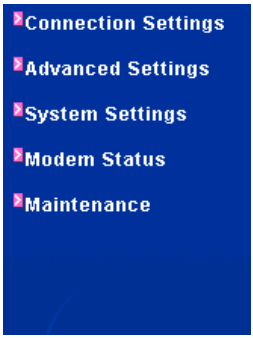
4.5 Switch

- Click on the **Switch** link on the navigation bar to view the Ethernet Configuration table. This table shows the current Ethernet settings, including current configuration, linked status, and speed/duplex for each port.



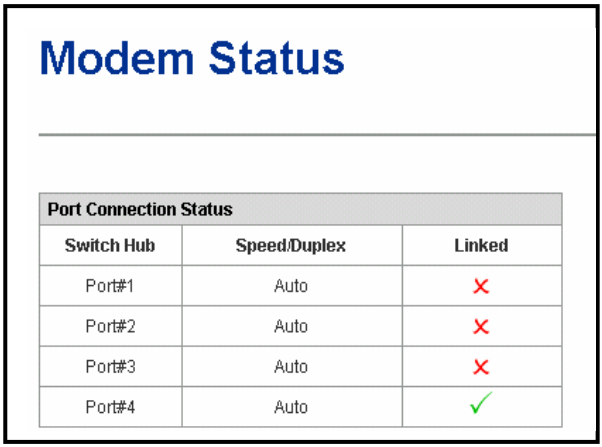
- **Speed/Duplex:** Choose a value for speed/duplex from the drop-down menu.
- Click on the **Apply** button to save the changes. You may need to refresh the Webpage to view the updated status of the port configurations. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

5. Modem Status

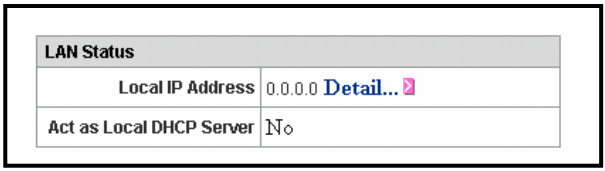


- Click on the **Modem Status** link on the navigation bar. You will then see the following tables.
- Listed in these tables are the **Port Connection Status, LAN Status, WAN Status, ADSL Status,** and **Device Status.**

Modem Status

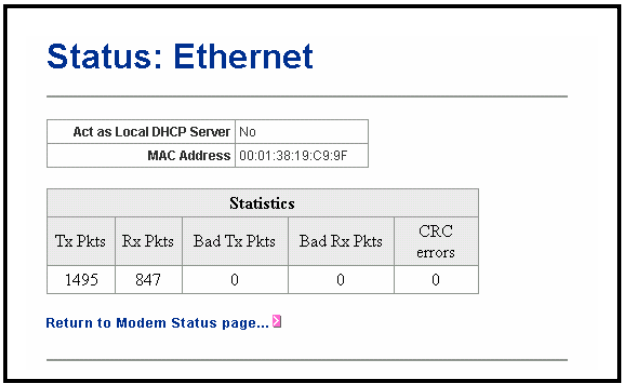


- **Port Connection Status:** This table shows the speed/duplex setting and linked status for each port on the modem.



LAN Status	
Local IP Address	0.0.0.0 Detail...
Act as Local DHCP Server	No

- **LAN Status:** This table shows the LAN IP Address of the modem and indicates whether the device is used as a DHCP server. Click on the **Detail…** link to view the Ethernet Status table.



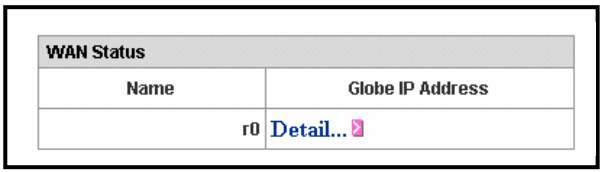
Status: Ethernet

Act as Local DHCP Server	No
MAC Address	00:01:38:19:C9:9F

Statistics				
Tx Pkts	Rx Pkts	Bad Tx Pkts	Bad Rx Pkts	CRC errors
1495	847	0	0	0

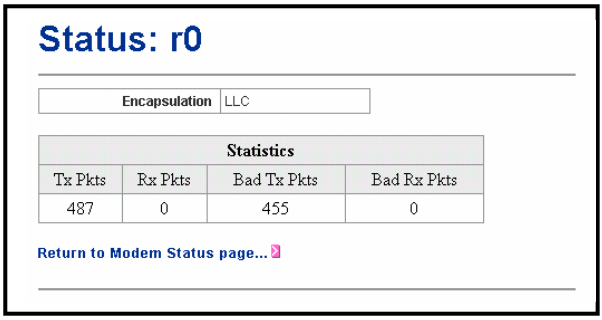
Return to Modem Status page...

- **Ethernet Status:** This table displays the LAN transmission statistics, as well as the DHCP server status of the modem and the MAC address of the Ethernet interface.



WAN Status	
Name	Globe IP Address
r0	Detail...

- **WAN Status:** This table lists the WAN connections and their respective IP addresses. Click on the **Detail…** link to view the transmission statistics for each connection.



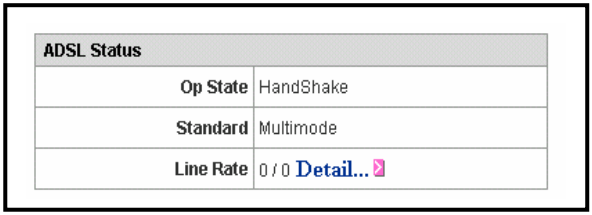
Status: r0

Encapsulation	LLC

Statistics			
Tx Pkts	Rx Pkts	Bad Tx Pkts	Bad Rx Pkts
487	0	455	0

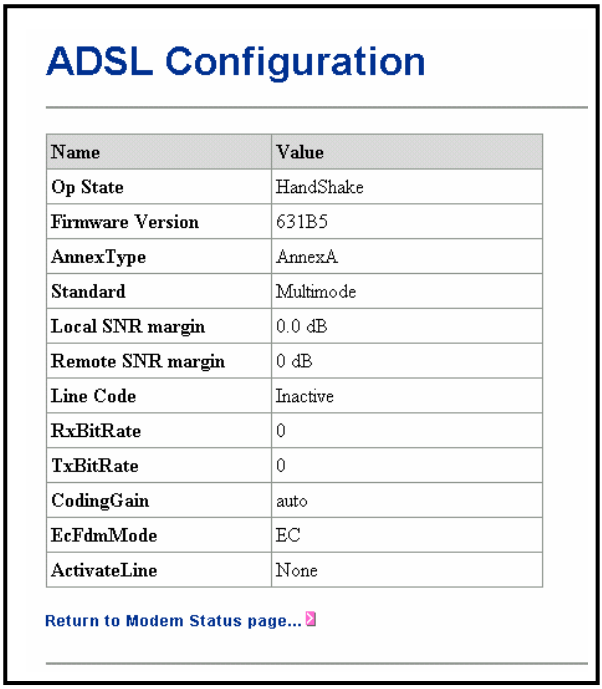
Return to Modem Status page...

- **Status:** This table lists the transmission statistics for the selected connection.



ADSL Status	
Op State	HandShake
Standard	Multimode
Line Rate	0 / 0 Detail...

- **ADSL Status:** This table displays the operational state, line standard, and line rate (upstream/downstream) of the ADSL modem. Click on the **Detail…** link to view the ADSL Configuration table.

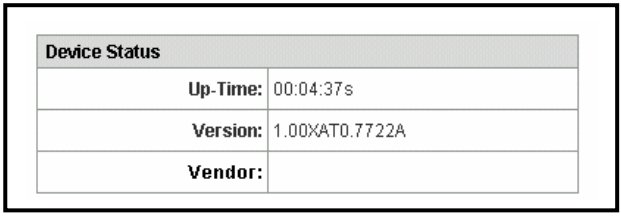


ADSL Configuration

Name	Value
Op State	HandShake
Firmware Version	631B5
AnnexType	AnnexA
Standard	Multimode
Local SNR margin	0.0 dB
Remote SNR margin	0 dB
Line Code	Inactive
RxBitRate	0
TxBitRate	0
CodingGain	auto
EcFdmMode	EC
ActivateLine	None

Return to Modem Status page...

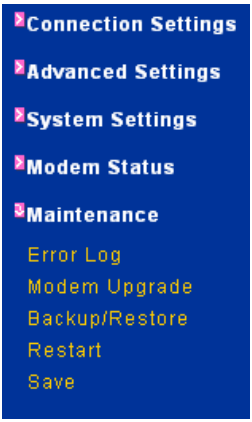
- **ADSL Configuration:** This table displays information about the modem's operational state, firmware version, annex type, standard signal coding, local and remote signal to noise ratios, connection line coding, reception and transmission bit rates, coding gain mode, Ec/Fdm mode, and line activation.



Device Status	
Up-Time:	00:04:37s
Version:	1.00XAT0.7722A
Vendor:	

- **Device Status:** This table displays the up-time, software version, and vendor of the modem.

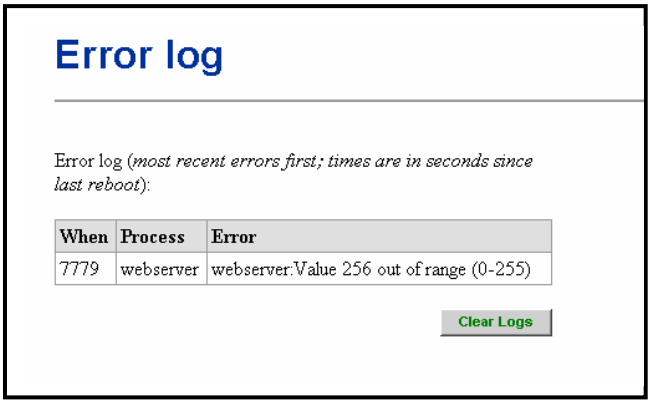
6. Maintenance



- Click on the **Maintenance** link on the navigation bar.
- This section includes **Error Log, Modem Upgrade, Backup/Restore, Restart** and **Save.** Each section is described in detail below.

6.1 Error Log

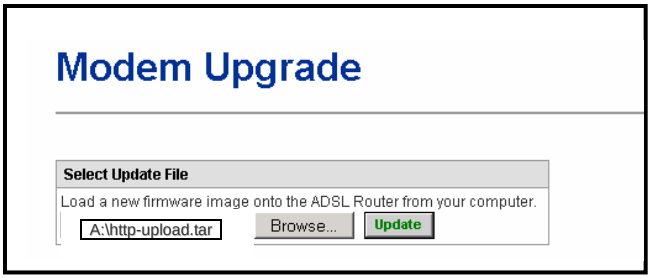
- Click on the **Error Log** link in the navigation bar to view the Error Log table.



- Click on the **Clear Logs** button to clear the log table.

6.2 Modem Upgrade

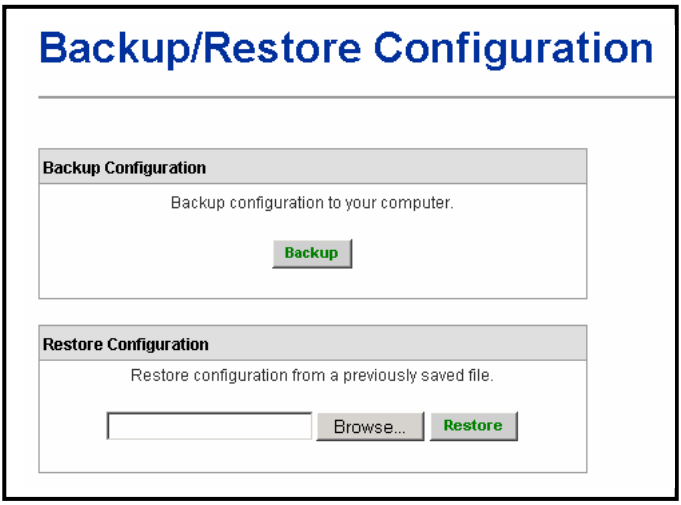
- Click on the **Modem Upgrade** link in the navigation bar to view the Modem Upgrade interface.



- Click on the **Browse** button to select the upgrade file.
- Click on the **Update** button when completed. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

6.3 Backup/Restore

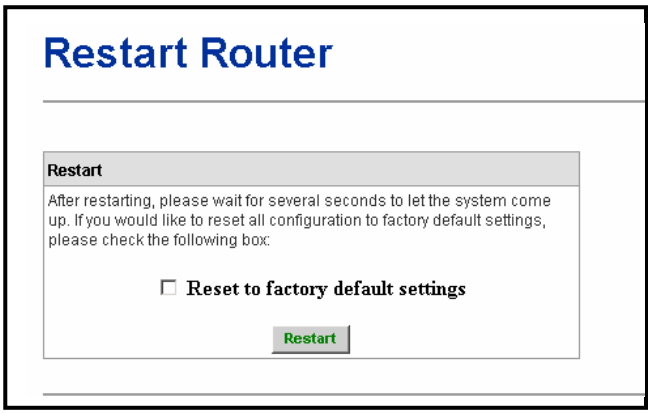
- Click on the **Backup/Restore** link in the navigation bar to view the Backup/Restore interface.



- **Backup Configuration:** To back up a configuration file, click on the **Backup** button, and then select the location where you would like to save the file.
- **Restore Configuration:** To restore a configuration file, click on the **Browse** button to select the backup file, and then click on the **Restore** button to restore the configuration. Please note that settings can only be permanently saved through the **Maintenance → Save** interface.

6.4 Restart

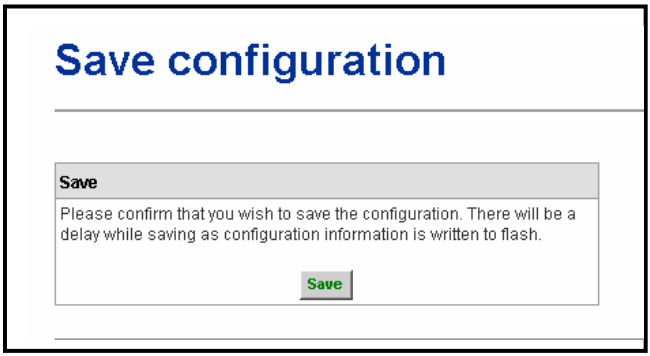
- Click on the **Restart** link in the navigation bar to view the Restart Router interface.


Restart Router
Restart
After restarting, please wait for several seconds to let the system come up. If you would like to reset all configuration to factory default settings, please check the following box:
Reset to factory default settings
Restart

- To restart the modem, click on the **Restart** button. You may also check the **Reset to factory default settings** box if you would like to restart the modem with the factory settings.

6.5 Save

- Click on the **Save** link in the navigation bar to view the Save Configuration page.


Save configuration
Save
Please confirm that you wish to save the configuration. There will be a delay while saving as configuration information is written to flash.
Save

- If you would like to save the current configuration, click on the **Save** button.

Appendix A – Specifications

A1. Hardware Specifications

- LAN Interface
  - Four port 10/100BaseT Ethernet switch HUB, IEEE 802.3u
  - Connector – RJ-45
- WAN ADSL Line Interface
  - Compliant with ADSL ITU G.992.1, G.992.2, G.992.3, G992.4, G.994.5 (X7822r+ only) and ANSI T1. 413 Issue 2
  - Line Impedance: 100 Ω
  - Connection Loops: One (pair wire)
  - Connector: RJ-11
- Indicators
  - PWR – Green LED indicates power and operation
  - ACT – Green LED indicates LAN data Transmitting / Receiving
  - LINK – Green LED indicates local interface link status
  - WAN – Green LED indicates ADSL data link
  - ALM – Red LED indicates data error or operation fault
- OAM&P
  - Local: Telnet or Web management via Ethernet
  - Remote: Telnet or Web Management
- Environment
  - Operation Temperature: 0°C ~ 45°C
  - Operation Humidity: 5% ~ 95%
  - Storage Temperature: -20 ~ +85°C
  - Storage Humidity: 5%~95%
- Power
  - AC Adapter: Input 110/220VAC, 50/60Hz; Output 15VAC 1A
  - Power Consumption: Less than 9 Watts
- Certificates
  - CE, CB, FCC Part 15 Class B, VCCI, UL, C-TICK

A2. Software Specifications

- ATM
  - ATM Cells over ADSL, AAL5
  - Bridge mode: Supports 8 PVCs
  - Router mode: Supports 5 PVCs
  - Supports UBR, CBR, VBR-nrt, and VBR-rt
  - ATM Forum UNI 3.0, UNI 3.1, UNI 4.0
  - ILMI 4.0
  - PPP over ATM PVC (RFC 2364)
- Bridging
  - Transparent Bridging (IEEE 802.1D)
  - RFC2684 (RFC 1483) Bridged
  - Spanning Tree Protocol (IEEE 802.1D)
  - IP and PPPoE packet filtering
  - IP Multicast IGMP Proxy
- Routing
  - IP routing, RIP1, RIP2, OSPF and static routing
  - PPPoE, and IP, PPP over ATM
  - PAP and CHAP
  - RFC2684 (RFC1483) Routed
  - NAT/PAT with extensive ALG support
  - DNS relay
  - Multihoming (IP Aliasing)
- Configuration and Network Management Features
  - DHCP client and server for IP management
  - Telnet for local or remote management
  - TFTP, HTTP for firmware upgrade and configuration
  - Web-based configuration and management
  - SNMP v1, v2, and v3 agent
  - SNMP MIB II
  - DSL MIB
  - ATM MIB

Appendix B – Warranties

B1. Product Warranty

XAVi Technologies warrants that the ADSL unit will be free from defects in material and workmanship for a period of twelve (12) months from the date of shipment.

XAVi Technologies shall incur no liability under this warranty if

- The allegedly defective goods are not returned prepaid to XAVi Technologies within thirty (30) days of the discovery of the alleged defect and in accordance with XAVi Technologies' repair procedures; or
- XAVi Technologies' tests disclose that the alleged defect is not due to defects in material or workmanship.

XAVi Technologies' liability shall be limited to either repair or replacement of the defective goods, at XAVi Technologies' option.

XAVi Technologies MARKS NO EXPRESS OR IMPLIED WARRANTIES REGARDING THE QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE BEYOND THOSE THAT APPEAR IN THE APPLICABLE USER'S DOCUMETATION. XAVi SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGE, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO BUSINESS OR BUSINESS RELATIONS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES.

B2. Warranty Repair

1. During the first three (3) months of ownership, XAVi Technologies will repair or replace a defective product covered under warranty within twenty-four (24) hours of receipt of the product. During the fourth (4th) through twelfth (12th) months of ownership, XAVi Technologies will repair or replace a defective product covered under warranty within ten (10) days of receipt of the product. The warranty period for the replaced products shall be ninety (90) days or the remainder of the warranty period of the original unit, whichever is greater. XAVi Technologies will ship surface freight. Expedited freight is at customer's expense.
2. The customer must return the defective product to XAVi Technologies within fourteen (14) days after the request for replacement. If the defective product is not returned within this time period, XAVi Technologies will bill the customer for the product at list price.

B3. Out-of-Warranty Repair

XAVi Technologies will either repair or, at its option, replace a defective product not covered under warranty within ten (10) working days of its receipt. Repair charges are available from the Repair Facility upon request. The warranty on a serviced product is thirty (30) days measured from date of service. Out-of-warranty repair charges are based upon the prices in effect at the time of return.

Appendix C – Regulations

C1. FCC Part 15 Notice

Warning: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 to the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, used, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is unlikely to cause harmful interference. But if it does, the user will be required to correct the interference at his or her own expense. The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless XAVi expressly approves the changes or modifications.

C2. IC CS-03 Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements as prescribed in appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, users should make sure that it is permissible to be connected to the facilities of the local telecommunications company. An acceptable method of connection must be used to install the equipment. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Warning: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority or an electrician.

C3. UL Safety Regulations

- Disconnect TNV circuit connector or before removing cover or equivalent.
- Disconnect TNV circuit connector(s) before disconnecting power.
- Do not use this product near water for example, near a bathtub, washbowl, and kitchen sink or laundry tub, in a wet basement, or near a swimming pool.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightening.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- Use only the power cord batteries indicated in this manual. Do not dispose of batteries in a fire, as they may explode. Check with local codes for possible special disposal instructions.

No. 26 AWG Telephone Line Cord shall either be provided with the equipment or shall be described in the safety instruction. If fuse (F1) is not present, see the caution statement listed below:

CAUTION: To reduce the risk of fire, use only No. 26 AWG or larger UL Listed or CSA Certified Telecommunication Line Cord.

Contact Information

You can help us serve you better by sending us your comments and feedback. Listed below are the addresses, telephone and fax numbers of our offices. You can also visit us on the World Wide Web at www.xavi.com.tw for more information. We look forward to hearing from you!

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